DONALD W. REYNOLDS JOURNALISM INSTITUTE
Missouri School of Journalism University of Missouri

The Information Trust Sharing Architecture

Infotrust eXchange

The Donald W. Reynolds Journalism Institute (RJI) is soliciting comment on this draft Information Trust Sharing Architecture (ITSA) concept summary. RJI is proposing to gauge the willingness of journalism stakeholders to participate in a consortium – working title The Information Trust Exchange, or ITE – that would create and manage use of ITSA standards.

THE CHALLENGE

As they move to the digital world, news organizations would like to once again be the best-possible way to receive a daily diet of information that matters. Publishers and other "content producers" also need a way to share value – to be compensated – with dynamic, variable pricing of "atomized" bits of content, remixed into services we can't today imagine. Now, people on the go want to efficiently access the broadest range of multimedia content customized to their needs -- in a few, simple actions. Achieving this simplicity will require the coordination of publishers, content licensors, aggregators and usage trackers, a range of stakeholders currently unfocused on this collective activity.

ITE a glance:
Convenience for users

- Choice of providers
- Trustworthy sources
- Deep personalization
- One ID, multiple services
- Manage 'personas'
- Persona/privacy control
- One account, one bill
- Subscriptions, per click

An "Information Trust Exchange" (working title) should establish consensus on minimum necessary open protocols to transfer information about usage and charges across a network (either the public Internet or some controlled subset). An ITE could facilitate emergence of an open user-sharing and payment protocol – either by developing the standard, or endorsing an open standard developed by an incumbent willing to share it. It could foster continuous innovation leading to collaboration around open standards. It might focus on developing the minimum necessary protocols for enabling information commerce -- protocols which do not leave a single player in a blocking position. The Information Trust Exchange can solve problems – has value propositions -- for publishers, advertisers and the information-consuming public.

- For the public, it creates the opportunity for access to lots of information resources with a single ID, password and account. But unlike proprietary services such as iTunes or Facebook Connect, the customer will be able to choose among a plurality of service providers who can compete over financial and privacy terms.

- It also creates a platform for affiliates to respond in a customized, personalized way to information requests, because it makes it possible for the user to offer their preference information when making an information request.

- For advertisers, it solves the problem of multiple identities for the same person, without them having to maintain any personally identifiable information or be beholden to one or two huge platform operators who hold master user accounts.

- For publishers, it creates the possibility of subscription networks through background "microaccounting" for cross-site exchanges of value and payment.

Each of these brings a large constituency of potential support and interest; each are possible in an integrated approach to the sharing of data about users and transactions. A system to do any three, strategically designed, can do the other one as a byproduct.

The ITE premise is to define an architecture, create protocols and interfaces, and accompanying business rules. Then contractually partner with technology companies prepared to build ITE-compliant networks that share user data, content and payments. As the profit from the system is designed to go to the operators and affiliates rather than the ITE, we believe operators could feasibly finance their technology and infrastructure investment and pay network fees to the exchange.

The Information Trust Exchange, whether chartered as a non-profit association or a co-operative, would not compete with its members in news or advertising, because it is proposed not to be a direct operator of anything – rather, it will develop standards, protocols and business rules, and license operation of authentication and logging services – data exchanges – by one or more private, for-profit operators.

ROLES FOR AN ITE ORGANIZATION:

- Establish governance structure
- Facilitate board formation, membership
- Fund protocol and standards development
- Research, test, commission key technologies
- Create voluntary privacy, trust, identity standards
- Protect privacy: Anonymous, yet trusted users
- Sanction protocols for sharing users/content and license their use
- Sanction multi-site user authentication services
- Facilitate web-wide microaccounting/subscriptions
- Support "atomized" content, wholesale/retailing pricing
- Broaden "deep web" access; not on web today
- Enhanced-CPM, precisely-targeted marketing
- Enable consumer choice for commerce, privacy
    - One account, one bill, one ID, purchase anywhere.
    - But no single owner of all users

Thus the Information Trust Exchange may have the potential to be a largely self-funded effort with the potential to facilitate revenues and profits for operators. Commercial entities can make their own business decisions about how much to spend to enable and connect to the network. They can't do that now is because there is no interconnect -- a private, yet public-benefit, system of unified policy, governance and sanctions. There is no non-profit exchange facilitator which, like the Internet itself, transcends any single government or enterprise.

DELIVERING FOR THE PUBLIC

- PRIVACY: Protect, share demographic and usage data
- PERSONAL: "Persona" yields custom information
- CHOICE: Many "info-valets," price/service competition
- RELEVANCE: Ads more effective, direct compensation
- CONVENIENCE: Easy sharing, selling, purchasing of online content; one ID, one account, one bill

Result . . . TRUST.

STRATEGIC ASSUMPTIONS

- STANDARDS -- While the number and independence of original news producers is an important element of a diverse press, the lack of collaboration on digital-media standards for sharing users and content value is impairing support for journalism. Collaboration on network sharing protocols and business rules is therefore essential to sustain competitive, independent journalism.

- PRICING -- The value of news objects vary widely based upon their timeliness, topic, type (long, short, investigative, narrative, spot, trade, MST) and application. News objects (stories, video, multimedia) increasingly are disengaged from publisher packages by aggregation and "atomization." Therefore, royalty-owning publishers need a way to assign and transfer value (pricing) of individual objects across a sharing network. A royalty-pool model fails because it removes value assignment from the original publisher. Consequently, a system must respect the pricing set by originating publishers (at wholesale), while allow the free assignment of pricing at the consumer (retail) level. Content objects must be available for sale on a bundled, subscription or *a la carte* basis.

- PRESERVE SILOS -- Nothing will restrict or inhibit a participating affiliate or publisher from continuing to operate within their own or other's user-management or value-exchange sharing services. A good analogy might be to a department or big-box store that accepts Visa or Mastercard, but also continues to offer its own store revolving credit card.
-
- PRIVACY – To gain marketer/advertiser participation, the Information Trust Exchange must support mechanisms for aggregating and sharing demographic, interest and preference data about individual users upon transparent terms acceptable to the individual. This calculus inherently raises issues of personal privacy for end users.

Nothing will restrict or inhibit a participating affiliate or publisher from continuing to operate within their own or other's user-management or value-exchange sharing services.

- REMOTE USER SERVICE – Publishers using the ITE system will be willing to sell information resources to anonymized incoming casual or "drive-by" users (a la "newsstand customers") at a reasonable price they establish, without knowing the identity or detailed information about these "guest" users.

- PROFILE DATA SHARING – ITE service providers who establish accounts and manage the persona and privacy of their users will be willing to share some demographic and interest information about their users to third-party publishers as a condition of those publishers being willing to provide services to those users.

OPERATIONAL REQUIREMENTS

- NETWORK SUBSCRIPTIONS – The service should allow publishers to be paid for providing digital content across an ITE network without having to have one-off relationship with each reader/user.

- DYNAMIC SERVICING – Publishers offering their content should have real-time personal, demographic, preference or interest attributes of a user/reader at the time the user makes an online/mobile request for information, so they can respond with targeted, customized messages or services.

- MICROACCOUNTING -- Publishers should not be required to participate in operations which "pool" royalties. Rather, a feature of the service should be census-type (vs. polling, pooling or sampling) logging and aggregation of billable content requests, with clearing-house settlement of payments and credits among publishers and user-account managers.

- WHOLESALE-RETAIL PRICING – Publishers shall be able to use one or more methods to establish the price they wish to receive (and be assured of payment) for a discrete digital object (or bundle), and be able to vary that price dynamically in real time based upon the attributes of the user requesting the object.

- ONE BILL/ACCOUNT –The service will enable a user/reader to have one bill/one account/single sign-on access to information from (virtually) anywhere, by subscription or by click/action?

- UNIVERSAL TRACKING – In order to gain the participation of publishers and advertisers, the system will enable a user's activity to be tracked across the ITE network and that activity aggregated – only -- to the user's home-base service provider for billing and analysis – contingent upon explicit permission of the user.

- CONTENT PACKAGING – In order to gain the participation of end users, publisher and billing-service users of the system should be able to facilitate custom assembly by the end user of information services from a variety of topical and geographic-oriented sources into personalized subscription packages.

- FREEMIUM vs. FREE – In order to gain participant of both privacy advocates and the advertising industry, the system should allow the public user to chose among a range of options from (1) no advertising and no disclosure or use of their tracked activity in a subscription-based approach to (2) receipt of highly customized commercial messages and the wide, background marketing of their information preferences in a rewards-based program approach.

- SUBSCRIPTION OR PER-CLICK – In order to satisfy the requirements of a plurality of publishers and service providers, the service should offer end users both sale or receipt of digital items within a pre-paid subscription package -- as well as being able to dynamically query the user if they want to purchase a particular resource on a one-time, one-item basis.

Key features, elements and technology

System attributes

A. Visa/telco analogy
B. Some specific system elements
C. Two stakeholder groups

The ITE protocol would create the opportunity for a new kind of entity which would help consumers manage their personas across a variety of information services – some paid and some that pay, or reward.

A. SYSTEM FEATURES

If a publisher chooses to become a service provider, then they get access to all of the activity of their OWN users across the network, giving them, in effect, "First Party" data vastly broader than they have access to today -- but only for those people they have account relationships with. This provides a hook for accountability as to use of personal data, and a hook that can be audited by the ITE administration if necessary.

1) System tracks all clicks (that involve value exchange) in background, aggregating them, settling aggregated value exchange.

2) Each user service provider gets clickstream data about their users which it can use subject to Terms of Service with the end user. Their TOS is auditable and enforceable by the ITE as a condition of system membership.

3) Publishers (content providers) do NOT get identifiable information about any user (at least not from this system); they just get assurance that the person is authorized to view the resource requested and that, if money is involved, the money is going to be handled and they will get or give what they expect.

4) This does not stop publishers from setting their own cookies or doing other things to identify users, unless or until the Information Trust Exchange prohibits such behavior as a condition of membership.

B. ANALOGOUS TO VISA/MC OR PHONE COMPANIES?

What is proposed is similar in some respects to the Visa/MC model, but in one key way it is more like the way the phone companies settle their calling traffic -- they settle aggregated debits/credits among each other based on numbers of calls exchanged -- but their consumer customers may be paying for minutes in bulk. The system tracks every call because that is necessary even to provide

unlimited calling packages to the public. This system as described permits a plurality of subscription packages with pricing as in a free market for digital information -- set by the service provider who holds the end-user's account, and also set by the publisher who wants pricing control over their content.

Where those two come together -- content sold at wholesale and subscriptions sold at retail -- is where the business opportunity lies -- arbitraging the cost of content against the subscription charge. Actually that's the same thing newspapers did -- arbitraging the cost of syndicated content, wire service and original reporting and advertising production costs against what was charged advertisers and subscribers. It seems simple and obvious today because it settled out over a 100 years or more. It's what every business figures out -- how to mark up your ingredients to make a profit at retail. We simple have to work out the arbitrage in this new world. This system provide the mechanics; the arbitrage is up to the market.

So in this system, Big Brother is blind for other than session authentication and billing purposes.

C. SPECIFIC ELEMENTS OF THE SERVICE

Operating principle

If your enterprise want to "own" and get data about a user, you have to maintain an account relationship with them which makes you accountable both to them and to the ITE's rules. Otherwise, they are anonymized to you as a content-vending publisher. You know only their service class, their home-base service provider and perhaps some other attributes shared on a “permissioned” basis.

So in this system, Big Brother is blind for other than session authentication and billing purposes . . . If your enterprise wants to "own" and get data about a user, you have to maintain an account relationship with her which makes you accountable both to her and to the ITE's rules.

Operating features

1) Every click across the network that involves an exchange of value (a payment for an article or a reward for viewing or doing something) is logged to an authentication and logging service, which is seen by the system participants as a "central shared service" although in network practice it may be distributed and hierarchical as with DNS.

2) The logging service knows the user only by a unique alphanumeric identifier supplied by the user's "home base" at the start of that particular session. As a matter of policy, the logging service shall not sell or provide clickstream data to ANYONE and provides it only to the user's home service provider for their purposes (and for audit purposes to the publishing content provider if requested). The identifier -- to anyone other than the home base itself -- reveals nothing more than the identity of the user's home base.

3) There may be a plurality of home-base account managers in the service (as there are thousands of home bases in Shiboleth/Internet2), providing end users a high degree of

choice regarding business terms, especially as to identity and privacy.

4) At settlement time, the settlement service bundles all the clicks -- sorted by home-base of the users on the one hand and by the vending publisher on the other hand -- and determines an aggregate debit or credit to charge the home base and an aggregated credit or debit to charge the publishers (note that a "publisher" could be a brand which is paying for a user to view a commercial message). This all is done periodically -- daily, weekly, monthly -- probably weekly in prototype -- across the bank ACH network.

5) The home base gets these bundled log reports and is free to sort them or use them as they wish (subject to their terms of service with the end user as to usage and privacy protection or not); in some cases there may be a discrete charge or payment to the end user for a particular access; in the vast majority of cases, one supposes, the home base will use the click-stream reports for demographic, marketing and business-model analysis but the end user will merely be paying a monthly subscription for some class of service.

6) The publisher (or information service provider), also gets bundled log reports of total usage so they can audit their payment or receipts, and the only sorting they are capable of doing is by the source of the end-user (i.e., their service-provider ID). Conceivably they might have methods to associate these anonymized usage reports to specific users, but the ITE would be in the business of making business rules governing this practice and the rules would be enforceable by anything up to the ultimate sanction -- cutting the offending information service provider off the system.

7) The provision for non-regulatory sanctions is one of the reasons why the governance and ownership of the service is so critical. The cutoff decision has to be the result of well-documented interchange rules (consider Visa as a model in this regard), and the entity making the decision has to have no competitive business interest one way or the other but rather ony an interest in the fair administration of the service and due regard for evolving identity and privacy rights of end users. Hence, the need for a non-governmental and non-investor-owned entity with a mission to efficiently oversee and operate a service and not profit from it. Profit is for the publishers and service providers who use the service.

D. THREE STAKEHOLDER GROUPS

We might thus see two sets of stakeholders in the ITE: Those who operate the marketplace functions, and those who conduct business across the marketplace by managing users or creating and vending content.

1. NETWORK FACILITATORS, OPERATORS, CONTRACTORS

- Technology and business service providers who operate ITE-sanction services under contract with the ITE, for which they pay some relative diminimus transaction- or volume-based license fee. These might include operators of the authentication and logging services, and providers of ancillary services that must interoperate with all auth and logging services. These might include financial-service firms which do settlement on

records providing by the auth/logging service, as well as entities who act as authorized agents of either publishers or end-user service providers to perform business-case services on network data. These network operators will require sanctioning by the Information Trust Exchange.

2. CONTENT PROVIDERS / USER SERVICE PROVIDERS

- Publishers/information service providers, and billing/subscription end-user service providers who wish to be authenticated across the entire ITE service network. Most of their cost would be payments to the tech and business-service providers of their choice (above) at free-market prices. But they would also be asked to pay an "interchange fee" based on transaction volume to the ITE, again solely sufficient to fund the ITE's governance and any necessary R&D. What they get for the interchange fee is a unique, ITE-wide identifier and the assurance they and their users will be "authenticated" globally so long as they respect the ITE clearing-house rules.

TECHNOLOGY

We now propose the Information Trust Sharing Architecture (ITSA). It draws significantly upon the proposals of both Buzz Wurzer and Bill Anderson[1] in 2012 and 2013. In some ways, it is conceptually similar to Clickshare Authentication and Logging Service, described in two United States patents.[2] It begins with a set of value propositions continues with functional specifications, and ends with build-out steps.

The ITSA should facilitate:

- Technical protocols for sharing users, content and payments
- Control for users over their demographic, financial and personal data
- Other features proposed at "Blueprinting the Information Valet Economy.")

A. THE ITSA ARCHITECTURE – BENEFITS

Buzz Wurzer's bullet-point summary of features and benefits may be found here:
http://newshare.com/wiki/index.php/Rji-pivot-project-new-network-approach

The architecture involves four parties: The (1) End User, the (2) End User Service Provider (USP), the (3) Content Provider (CP) and the (4) network operators collectively operating authentication, logging, and settlement services.

1) Key benefits of the ITSA architecture:

- Scalability via a plurality of providers
- Choice of services, yet universal access for users
- A free-market for value exchange

[1] -- Buzz Wurzer is a retired Hearst Corp. executive; Bill Anderson is a retired Seattle SeaFirst bank CTO.

[2] -- http://tinyurl.com/2wtlpu / http://tinyurl.com/2ukwj4 / http://tinyurl.com/csc-patent-2013 / http://tinyurl.com/csc-patent-news / http://newshare.com/disclosure

- A middleware connection between POS and legacy financial services and advertising networks.

2) Key benefit of ITSA middleware

- User-centric, privacy-enabling service
- Allows independent silos to connect when desired

3) Key benefit of exchange (or association)

- Establishes protocols and rules for network
- Ensures price and service competition
- Avois government control of network
- Avoids private-investor control of network

4) Unique selling proposition

- Makes money sharing users, content, advertising
- Enables incremental growth of ASCAP model

5) Benefits to users

- One account, one-ID, one-bill
- Privacy-protected purchasing
- Control over "persona," ability to seek offers
- Choice of service providers

6) Benefits to media companies

- Keep control of (but share) user bases
- Deeper relationship with users
- Ability to aggregate users, content

7) Benefits to advertisers

- Standardized, non-proprietary "persona" management
- Ability to simply target users
- Ability to respond to "offers" from users
- Audience measurements by identified user

B. FUNCTIONAL SPECIFICATIONS

Technically, ITSA might consist of two general components:

- ITSA PROTOCOLS -- A set of technical protocols and business rules which govern the transfer of specific information across the public TCP/IP network (Internet) among and between (a) diverse point-of-service (POS) devices, such as laptops, smartphones and tablets and (b) network members, including content providers (CP) and end-user service providers (USP).

- ITSA NETWORK -- A special-purpose network that securely transfers information among and between network members, including content providers, end-user service providers, network operators and network service providers.

Here are key requirements of the protocol and the network:

C. PROTOCOL REQUIREMENTS

The ITSA protocol must support:

- Standardized transfer of a unique, non-repudiatable user identifier, assigned by a USP, in real time, when a user makes an HTTP request to a CP across a TCP/IP public network, for a unique resource.

- Standardized transfer of a set of end-user attributes, along with the above request, sufficient to permit decisions to authorize or deny access to resources based on a variety of parameters, such as a subscription, ability or willingness to pay, age, membership or the like.

- Real-time query and reply to confirm desire of the end user to acquire the resource based upon its cost, value or other attributes.

The ITSA network should support:

- Real-time authentication back to their USP of a user's credentials and rights upon making a resource request of a CP and prior to serving the request, whether the request is to the CP's servers or to any Network Content Repository (see below).

- Logging of services provided by unique user, resource provided, and any negotiated and confirmed value of the event. The event could involve serving news content, or sponsored content ("advertising") with the value exchange recorded in either direction.

In summary: The end user becomes a subscriber to an individual exchange member's news service and from then on the consumer can access any content in the exchange's repository or on the servers of other exchange-member content providers.

- A provision (internal or outsourced) for storing and indexing news content uploaded by members in any Network Content Repository.

- The ITSA network services includes programs that:

  a) Store and index news content
  b) Distribute messages about the content to the members
  c) Control access to the content, allowing for news search, accounting for each individual access, accounting for the due-from and due-to payments cycle and act as the intermediary to an all-new internet payments system.

Information about end-user identities are known only to the end-user's service provider (USP). The network system only knows users by a standardized unique alphaneumeric identifier.

In summary: The end user becomes a subscriber to an individual exchange member's news service and from then on the consumer can access any content in the exchange's repository or on the servers of other exchange-member content providers.

The ITSA infrastructure takes care of all the accounting needed to get the payment from or credit to the consumer's home-base service provider to the appropriate content provider (publisher or advertiser) through a process of periodic aggregation and settlement of transactions. the original content owner (or the payment from the advertiser to the end-user's service.

Building a user "persona" and content attributes

The network protocols and business rules specify attributes and three areas:

A. User identity and profile attributes
B. Tagging of digital content for pricing and royalty management
C. Tracking and settlement of value exchange (payments, credits)

SPECIFIC ATTRIBUTES

A. User identity and profile attributes

The ITSA facilities the transfer of the following identifiers for each request made by a user for resources across the network:

Network-level attributes (accompany all requests)

1. UserID – A globally unique attribute which includes the user's home-base host ID. This is the minimum attribute necessary to log access records for payment or credit and is analogous to a credit-card number.

2. One or more customer-group codes to identify user assignment to specific groups for publisher- or service-provider proprietary purposes.

3. A service-class to define eligibility of the user for specific levels of pricing, content or services

4. The content server ID of the publisher supplying content and optionally requesting a royalty payment ("PubMbrID")

Preference-level attributes (accompany and constraint all requests)

5. Other flags regarding preferences for: (a) privacy (b) parental control (c) advertising viewing preference (d) do-not-track

Identity attributes (optionally shared with request)

6. Identity attributes available for sharing (or not) depending upon privacy preference (above), include user-supplied nickname, email, fullname, date of birth, genderl, postal code, country, language and timezone

Business attributes (optionally supplied with end-user permission)

7. A vending publisher may request other business attributes of the person and the person's home base may or may not supply the attributes based upon the user's expressed privacy preferences. The attributes may be stored and supplied in formats developed by Schema.org (http://schema.org/Person)

EduPerson attributes (optionally supplied with end-user permission)

8. A vending publisher may request other Internet2 "eduPerson" attributes of the person and the person's home base may or may not supply the attributes based upon the user's expressed privacy preferences. The attributes may be stored and supplied in formats developed by Internet2: http://www.internet2.edu/media/medialibrary/2013/09/04/internet2-mace-dir-eduperson-201203.html

Interest identities and topics

9. A vending publisher/marketer may request from the user's home-base service provider attributes related to any topical "interests" and "identities" stored in the form of key words or phrases depending upon the user's privacy preference.

B. Digital content tags for pricing or royalty management

The ITSA also will provide a schema for vending publishers to XML-tag royalty- or price-identified content which will be recognized and respected by user service providers, and logged as necessary for financial settlement. **Thus content can reside anywhere on the network and the rights owner will be paid for use.** Among basic content attributes are:

1. The creation date/time in YYYYMMDDHHMMSS format.
2. An expiration date supplied by the original content producer in the same format.
3. The PubMbrID of the creator or publisher entitled to royalty or payment.
4. A optional Digital Object Identifier (http://doi.org)

C. Tracking/settlement of value exchange

Finally, the ITSA provides a schema enabling the negotiation and computation of value exchange. The table invoked will depend upon whether the resource is chargeable content, or sponsored content (including advertising).

5. A variable table of royalty payments (or a key to a master royalty-payment schedule) used to compute the charge to the user's service provider upon the digital vending of the resource depending upon use, service class and other custom factors.

6. A variable table of credits paid to user's service provider upon the end user's viewing of a digital resource, depending on level of use or interaction.

7. A retail "Markup Ratio" in use by the User Service Provider which is provided to the content-serving publisher in real-time so that if the end-user is to be shown the object's price before purchase, the price show will be "retail" not "wholesale." *(See Appendix A)*

APPENDIX A

PRICING – WHOLESALE-RETAIL

A frequent question posted by interviewees involves pricing. If news organizations are going to share users, and share content, who is going to be in control of pricing? *(See Exhibit O)* The answer: No one person or entity. Some examples:

- Airlines benefit from a common air-traffic control system and they share airports. They fly similar aircraft made by the same companies. But they compete on pricing, many routes, and most aspects of service.
- Thousands of companies float their stock on major exchanges. The price of their stock is subject to near absolute competition for investors' dollars. Yet they also use common bidding, trading and settlement systems.
- Online advertising exchanges work in milliseconds with demand-side and sell-side platforms to match willing advertisers with willing publishers and aggregators to deliver "impressions" to interested consumers. Prices range dramatically, as do the content and form of the advertisements.

As the profit from the system is designed to go to the operators and affiliates rather than the ITE, we believe operators could feasibly finance their technology and infra-structure investment and pay network fees to the exchange. Thus our premise is that infrastructure and other startup costs born by the ITE manager will be less than $2 million. "The thing is if you get this up and going one could actually turn to venture capital firms to expand the market once the idea is well put together," says Robert Picard, of the Reuters Institute. "That is not an impossible idea. The infrastructure that goes behind it could be completely commercial. It could be newspaper and news organizations or media investors."

When you click on that article as a *New York Times* user, the exchange should record a payment to *Le Figaro* of five cents and record a charge to *The New York Times* of five cents. But whether you as a consumer ever pay anything other than that extra $1 -- ought to be up to *The New York Times*.

But what if you added to the mix the idea of wholesale-retail pricing, just like in the real world? If General Electric Co. makes a toaster oven and sells it to Wal-Mart Stores Inc., Wal-Mart then decides how to price the toaster. Think of the Internet market for information as like a Wal-Mart store. The retailer – your preferred publisher or service provider – is responsible for billing you and paying for what you buy from his or her store. Then, they go pay the originating publisher – the wholesaler – for the items you purchased -- to make up your personalized information bundle. And imagine, as with the advertising exchanges, that this happens instantly. The originating publisher, if it knows something about you, might vary the offer (price and terms). Your home-based publisher, the retailer, might chose to give you some of the items as part of a package, and ask you to pay for other pieces a la carte. Unlike Wal-Mart, the inventory of a digital information retail store doesn't need to be shipped or stored in bricks-and-mortar fashion. It can be sought, priced, sold and consumed in milliseconds.

All that's needed to make such a system work is a standardized method – a set of protocols – for exchanging information about users and logging -- to a common place -- the cost of what is purchased. A useful feature might be the ability to aggregate many small purchases that are charged periodically – making efficient use of financial-transaction networks like the bank Automated Clearing House (ACH) networks and avoiding relatively steeper credit-card interchange fees.

Imagine this scenario: *The New York Times* might send you an email and say for an extra $1 a month, you get 10-15 clicks per month from a set of French language publications. It's just $1 a month and you'll have that Francophile bonus. What would happen when you click to an article at *Le Figaro*? They would have some price they had set on that article – maybe it is five cents (converted from Euros). When you click on that article as a *New York Times* user, the exchange should record a payment to *Le Figaro* of five cents and record a charge to *The New York Times* of five cents. But whether you as a consumer ever pay anything other than that extra $1 -- ought to be up to *The New York Times*.

If you have a system where the parties on a business-to-business basis agree to pay the cost of people surfing within the system, then all it becomes is a strategic business exercise how much *The New York Times* should charge you per month. *The Times* might do this for awhile and find they are losing money by just charging you $1 a month, so they might come back to you and raise the package to $2 a month. Or maybe it has a cap on it of 30 clicks per month -- then you have to pay more.

One can't presume to guess how all those things will work out. What we need to create is a system that enables all of that and then allows the free market to operate as it does so well –- which is to have pricing and packages find their equilibrium. What is described is a free market for digital information – a economic libertarian's delight! But don't we need to start by enabling those kinds of capabilities? *(See Exhibit O).*

Apple is not going to play in a new ITE ecosystem if that ecosystem requires the company to shut down the iTunes store or alter how it operates. Ditto with Amazon and with Facebook Credits and Connect. The ITE protocols have to be additive to these business – a way for them to expand from their three-party services into a true, four-party trust network.